



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Ms. Cindy Bladey
Office of Administration
Mail Stop: OWFN-12-H08
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Ms. Bladey:

In accordance with our responsibilities under Section 309 of the Clean Air Act, the National Environmental Policy Act (NEPA), and the Council on Environmental Quality's (CEQ) NEPA regulations, the Environmental Protection Agency (EPA) has reviewed the Nuclear Regulatory Commission's (NRC) draft Supplement to the Department of Energy's Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, NUREG -2184.

The scope of the draft Supplement is limited to the potential environmental impacts from the proposed repository on groundwater and from surface discharges of groundwater. It describes the affected environment and assesses the potential environmental impacts with respect to potential contaminant releases from the repository that could be transported through the volcanic-alluvial aquifer in Fortymile Wash and the Amargosa Desert, and to the Furnace Creek/Middle Basin area of Death Valley. It evaluates the potential radiological and nonradiological impacts over a one million year period - on the aquifer environment, soils, ecology, and public health, as well as the potential for disproportionate impacts on minority or low-income populations. It also assesses the potential cumulative impacts associated with other past, present, or reasonably foreseeable future actions. In order to assist NRC in its evaluation, EPA offers the enclosed requests for clarification of the analysis and other comments and recommendations for your consideration.

We appreciate the opportunity to review and comment on this draft Supplement. If you have any further questions, please contact me or Marthea Rountree at (202) 564-7141.

Sincerely,

A handwritten signature in dark ink, reading "Susan E. Bromm", followed by a long horizontal flourish.

Susan E. Bromm
Director
Office of Federal Activities

Enclosure

Recycling of Contaminants in Irrigation Water

The discussion regarding the recycling of contaminants in irrigation water at Amargosa Farms is not clear. Essentially, the draft Supplement appears to be stating that a higher rate of contaminant recycling leads to higher concentrations in both soils and in groundwater, as compared to previous analyses. To be more specific, the descriptions in Chapter 3 and Appendix A are not consistent. Chapter 3 states that the Supplement uses a value of 86 percent for the recycling fraction as *“the amount of water pumped to the surface that reaches the water table”* (emphasis added). It notes on page 3-6 that its assumption regarding the proportion of contaminants in well water that infiltrates back to the water table and is then recaptured by wells is significantly larger than that employed in earlier analyses (0.86 compared to 0.11). It also states that “A larger value for this factor leads to greater calculated contaminant concentrations in the exposure pathways, greater estimates of dose and body intake, and greater calculated values of contaminants accumulating in soils.” In comparison, Appendix A (Figure A-2 on page A-17) illustrates the water uses and the resulting exposure pathways. In this figure, only crop irrigation leads to accumulation of contaminants in soil. This would also appear to be the use/pathway through which the bulk of contaminants are returned to the water table. It is not clear how other uses/pathways would lead to recycling of contaminants back to the water table.

Recommendation:

We recommend that NRC directly address and clarify this inconsistency in the final Supplement, including how water from other uses reaches the water table and whether the use of well water by the reasonably maximally exposed individual (RMEI) to grow produce for personal use is considered to be irrigation.

Total Dissolved Solids (TDS) in Potable Water

In the discussion of surface discharges in Appendix A, the draft Supplement states that “water with less than 250 ppm [Total Dissolved Solids] is generally considered to be potable” (page A-15, line 31-32). We recommend that NRC refer to the National Secondary Drinking Water Regulations, which include a secondary maximum contaminant level for TDS of 500 ppm (40 CFR 143.3). These regulations control contaminants in drinking water that primarily affect the aesthetic qualities relating to the public acceptance of drinking water. At considerably higher concentrations of these contaminants, health implications may also exist. The regulations are not federally enforceable but are intended as guidelines for the States.

Recommendation:

It would be helpful if the Supplement refers to the National Secondary Drinking Water Regulations to support this discussion regarding total dissolved solids in potable water.

Well Withdrawals

The draft Supplement is unclear as to how it accounts for well withdrawals either by the reasonably maximally exposed individual (RMEI) or by other parties at or in the vicinity of the compliance location.

Recommendation:

We recommend that the Supplement explicitly state whether the analysis of withdrawals and discharges farther down gradient assume that such withdrawals at the compliance location have occurred.

Carcinogenic Risk

The Department of Energy’s report (DOE, 2014) cited in the draft uses a conversion factor of 0.0006 probability of latent cancer per rem of dose recommendations of the Interagency Steering Committee on Radiation Standards (ISCORS). ISCORS also recommends that the “The radionuclide-specific risk coefficients published in the Federal Guidance Report No. 13 be used.

Recommendation:

Provide values of carcinogenic risk to the receptors calculated using coefficients provided by EPA Federal Guidance Report No. 13 (U.S. EPA, 1999).

Miscellaneous

The units for uranium in table 3-2 should be consistent with those in the text: µg/L.

Recommendation:

Correct the units in the table.

References

Interagency Steering Committee on Radiation Standards. 2002. Final Report. A Method for Estimating Radiation Risk from Total Effective Dose Equivalent (TEDE). ISCORS Technical Report 2002-02.

U.S. DOE. 2014. Impacts for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada, SUMMARY, RWEV-REP-001-Update, October 2014.

<http://www.id.energy.gov/Groundwater/pdf%5CAnalysis%20of%20Postclosure%20GW%20Analysis%20-%20Complete%20Low%20Res.pdf>

U.S. EPA. 1999. Federal Guidance Report No. 13, "Cancer Risk Coefficients for Environmental Exposure to Radionuclides" (EPA 402-R-99-001), 1999.

<http://www2.epa.gov/sites/production/files/2015-05/documents/402-r-99-001.pdf>